



Sphero Mission 1

Variables, Loops, & LEDs



File transfers between computer and Pi

SCP File transfers

SCP, Filezilla, WinSCP

Raspberry Pi recognizes most USB sticks

Plug in and transfer

Google Drive

Upload to Google Drive from computer, download from Pi

Email

Email the file to yourself

Git

You have been programming for awhile now

SCP Transfers! (Optional)

We have one more thing to learn before we can start.

How to transfer files between our computer, and the Raspberry Pi.

Follow along with the YouTube Video!

https://youtu.be/O_B6LGE8Pe8

Set up SCP to transfer files (Optional)

Mac & Windows:

Download Filezilla Client - <https://filezilla-project.org>

Don't install Adaware - Extra junk software

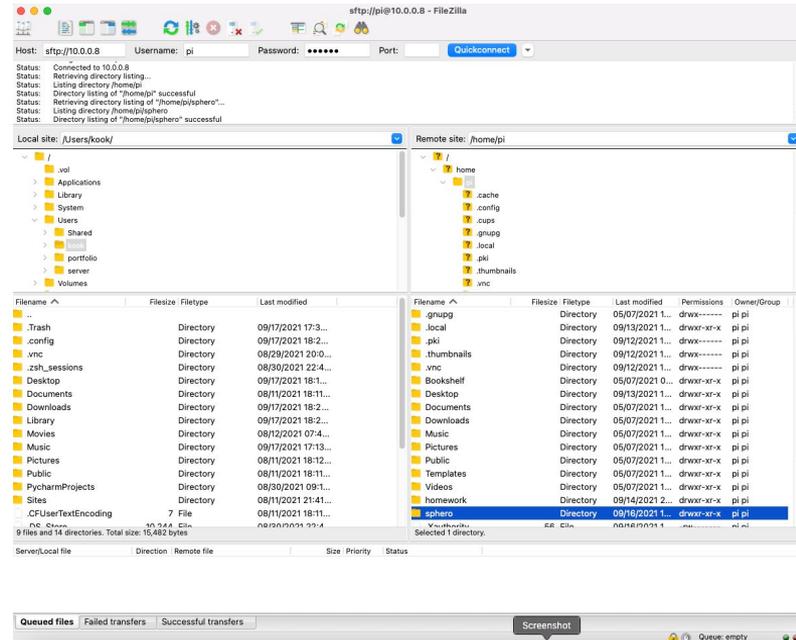
Host: *Your Pi IP address*

Username: Pi

Password: *Your Pi Password*

Port: 22

Quickconnect



Set up SCP to transfer files (Optional)

Linux (or Mac):

Transfer from Raspberry Pi:

Use SCP - `scp [userName]@[IP Address]:[from/path] [to/path]`

```
kook@DESKTOP-G5LP852:/mnt/c/Users/AS412$ scp pi@10.0.0.8:/home/pi/sphero/missions/mission1.py /mnt/c/Users/AS412/mission1.py
pi@10.0.0.8's password:
mission1.py 100% 1161 329.8KB/s 00:00
```

Transfer to Raspberry Pi:

Use SCP - `scp [to/path] [userName]@[IP Address]:[from/path]`

```
kook@DESKTOP-G5LP852:/mnt/c/Users/AS412$ scp /mnt/c/Users/AS412/mission1.py pi@10.0.0.8:/home/pi/sphero/missions/mission1.py
pi@10.0.0.8's password:
mission1.py 100% 1161 502.7KB/s 00:00
```

Create new directory/folder

Before we start, we need to make a new directory on your Raspberry Pi.

Open your terminal and type the following:

```
cd sphero
```

```
mkdir missions
```

This will create a folder called *missions* within your *sphero* folder.

Upload all of your missions homework to this folder as you download them.

If you do not, you will get error messages when trying to run your code.

Set LED colors

When programming, naming is important so others can follow along!

```
# Set LED color
rvr.set_all_leds(
    led_group=RvrLedGroups.all_lights.value,
    led_brightness_values=[color for _ in range(10) for color in [red, green, blue]]
)
```

led_group=RvrLedGroups.all_lights.value:

Reach into our programming to set the value of all LEDs on the RVR

led_brightness_values=[color []]:

Set the color of the LEDs (using numeric values)

Set LED colors - Fix code

We'll start off a little easy to help understand what our code is doing.

Line 21 through 23 has broken code:

```
# FIX THIS CODE!  
red=255  
green=  
blue=  
# FIX THIS CODE!
```

Fix this code by correcting the spacing & adding numbers between 0 and 255

Run *pipenv shell* in your *~/sphero* directory, go to your missions directory, run *mission1.py* and watch your Sphero LED colors change to what you set them.

Set LED colors - Loop

When creating the loop, notice that we need a way to change the LED colors as the program loops.

```
43 #CREATE LOOP HERE!  
44 # Set LED color  
45 rvr.set_all_leds(  
46     led_group=RvrLedGroups.all_lights.value,  
47     led_brightness_values=[color for _ in range(10) for color in [red, green, blue]]  
48 )  
49 #CREATE LOOP HERE!
```

Hint - You can redefine the red, green, blue variables within your loop, and add or subtract to those numbers as it loops. Just make sure it stays within the 0-255 range!

Running your code

Turn on your RVR, if it's been on for awhile then cycle the power.

Don't forget to run your code you need to do the following in the Pi terminal:

```
cd sphero
```

```
pipenv shell
```

```
cd missions
```

```
python mission1.py
```

Step-by-step Solution:

https://youtu.be/O_B6LGE8Pe8